

Claims

- [c1] 1. A mask for fabricating contacts, comprising:
a contact pattern having a photo-exposure region; and
an edge pattern at the edge of the contact pattern,
wherein the edge pattern is a half-tone region.
- [c2] 2. The mask of claim 1, wherein the edge pattern includes a sawtooth edge pattern.
- [c3] 3. The mask of claim 2, wherein the sawtooth edge pattern includes an edge lining with a series of sharp point sawtooth.
- [c4] 4. The mask of claim 2, wherein the sawtooth edge pattern includes a band with a series of truncated sawtooth.
- [c5] 5. The mask of claim 1, wherein the edge pattern includes at least a circular pattern.
- [c6] 6. The mask of claim 5, wherein the circular pattern includes at least a concentric circular pattern.
- [c7] 7. The mask of claim 5, wherein the circular pattern includes at least a non-concentric circular pattern.
- [c8] 8. The mask of claim 5, wherein the circular pattern in-

cludes at least a spiral pattern.

[c9] 9. The mask of claim 1, wherein the edge pattern includes a polygonal mosaic edge pattern.

[c10] 10. The mask of claim 9, wherein the polygonal mosaic edge pattern includes a four-sided mosaic edge pattern.

[c11] 11. A method of forming contacts, comprising the steps of:
providing a substrate having a first conductive layer and a dielectric layer over the first conductive layer;
setting up a mask over the dielectric layer, wherein the mask further includes:
a contact pattern having a photo-exposure region; and
an edge pattern at the edge of the contact pattern,
wherein the edge pattern is a half-tone region;
conducting a patterning process to form a contact opening in the dielectric layer, wherein the contact opening exposes the first conductive layer; and
forming a second conductive layer over the exposed surface of the contact opening.

[c12] 12. The contact process of claim 11, wherein the side-wall of the contact opening and the first conductive layer form a contact angle smaller than 70°.

[c13] 13. The contact process of claim 11, wherein the pattern

process is a photolithographic process if the dielectric layer is fabricated from organic photosensitive material.

[c14] 14. The contact process of claim 11, wherein the steps of setting up a mask over the dielectric layer and conducting a patterning process is replaced by the following sub-steps if the dielectric layer is fabricated from a non-photosensitive material:

forming a photoresist layer over the dielectric layer;

setting up a mask over the photoresist layer;

conducting a photolithographic and etching process in sequence to form a contact opening in the dielectric layer; and

removing the photoresist layer.

[c15] 15. The contact process of claim 11, wherein the edge pattern on the mask includes a sawtooth edge pattern.

[c16] 16. The contact process of claim 11, wherein the edge pattern on the mask includes at least a circular pattern.

[c17] 17. The contact process of claim 11, wherein the edge pattern on the mask includes at least a polygonal mosaic edge pattern.